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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of

Takashi OGURA, et al.

Serial No.: 10/561,608

Group Art Unit: 2812

Filing Date: December 20, 2005

Examiner: Unknown

For: SEMICONDUCTOR DEVICE AND PRODUCTION METHOD THEREFOR

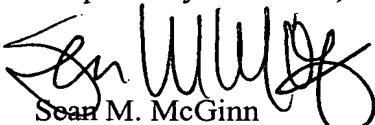
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**PAPER**

Sir:

Submitted herewith is the Notification of Transmittal of Copies of Translation of the International Preliminary Report on Patentability dated March 30, 2006.

Respectfully submitted,



Sean M. McGinn  
Registration No.: 34,386

Date: 6/27/06  
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From the INTERNATIONAL BUREAU

**PCT**

NOTIFICATION OF TRANSMITTAL  
OF COPIES OF TRANSLATION  
OF THE INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY  
(CHAPTER I OR CHAPTER II  
OF THE PATENT COOPERATION TREATY)  
(PCT Rules 44bis.3(c) and 72.2)

Date of mailing (day/month/year)  
30 March 2006 (30.03.2006)

To:

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8th Floor, 16th Kowa Bldg.  
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Minato-ku, Tokyo 107-0052  
JAPON

APR - 6, 2006

Applicant's or agent's file reference  
NEC04P012

**IMPORTANT NOTIFICATION**

International application No.  
PCT/JP2004/005997

International filing date (day/month/year)  
26 April 2004 (26.04.2004)

Applicant

NEC CORPORATION et al

**1. Transmittal of the translation to the applicant.**

The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter I).



The International Bureau transmits herewith a copy of the English translation of the international preliminary report on patentability (Chapter II).

**2. Transmittal of the copy of the translation to the designated or elected Offices.**

The International Bureau notifies the applicant that copies of that translation have been transmitted to the following designated or elected Offices requiring such translation:

EP, KR

The following designated or elected Offices, having waived the requirement for such a transmittal at this time, will receive copies of that translation from the International Bureau only upon their request:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OA, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW

**3. Reminder regarding translation into (one of) the official language(s) of the elected Office(s).**

The applicant is reminded that, where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability (Chapter II).

**It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned within the applicable time limit (Rule 74.1). See Volume II of the PCT Applicant's Guide for further details.**

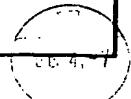
The International Bureau of WIPO  
34, chemin des Colombettes  
1211 Geneva 20, Switzerland

Authorized officer

Masashi Honda

Facsimile No.+41 22 740 14 35

Facsimile No.+41 22 338 70 10



Translation

PATENT COOPERATION TREATY  
PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>NEC04P012</b>	<b>FOR FURTHER ACTION</b>		See Form PCT/IPEA/416																								
International application No. <b>PCT/JP2004/005997</b>	International filing date (day/month/year) <b>26.04.2004</b>	Priority date (day/month/year) <b>20.06.2003</b>																									
International Patent Classification (IPC) or national classification and IPC																											
<p>Applicant <b>NEC CORPORATION</b></p>																											
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <b>5</b> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <b>5</b> sheets, as follows:</p> <p><input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table> <tbody> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </tbody> </table>				<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input checked="" type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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<input type="checkbox"/>	Box No. VIII	Certain observations on the international application																									

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/005997

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

This report is based on translations from the original language into the following which is the language of a translation furnished for the purposes of:  
 international search (Rule 12.3 and 23.1(b))  
 publication of the international application (Rule 12.4)  
 international preliminary examination (Rule 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

the international application as originally filed/furnished  
 the description:  
 pages 1-17 as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the claims:  
 nos. 4-13, 16-20 as originally filed/furnished  
 nos.\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
 nos.\* 1-3, 21-32 received by this Authority on 02.03.2005  
 nos.\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the drawings:  
 sheets 1-11 as originally filed/furnished  
 sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 sheets\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3.  The amendments have resulted in the cancellation of:  
 the description, pages \_\_\_\_\_  
 the claims, nos. 14, 15  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to sequence listing (specify): \_\_\_\_\_

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).  
 the description, pages \_\_\_\_\_  
 the claims, nos. \_\_\_\_\_  
 the drawings, sheets/figs \_\_\_\_\_  
 the sequence listing (specify): \_\_\_\_\_  
 any table(s) related to sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/005997

## Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

the entire international application  
 claims Nos. 4-8, 18-21, 25-32

because:

the said international application, or the said claims Nos. \_\_\_\_\_ relate to the following subject matter which does not require an international preliminary examination (*specify*):

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. \_\_\_\_\_ are so unclear that no meaningful opinion could be formed (*specify*):

the claims, or said claims Nos. \_\_\_\_\_ are so inadequately supported by the description that no meaningful opinion could be formed.

no international search report has been established for said claims Nos. 4-8, 18-21, 25-32

the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form  has not been furnished does not comply with the standardthe computer readable form  has not been furnished does not comply with the standard

the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-bis of the Administrative Instructions.

See Supplemental Box for further details.

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.  
PCT/JP2004/005997

Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement																									
<p><b>1. Statement</b></p> <table> <tr> <td>Novelty (N)</td> <td>Claims</td> <td><u>1-3, 9-13, 16, 17, 22-24</u></td> <td>YES</td> </tr> <tr> <td></td> <td>Claims</td> <td>_____</td> <td>NO</td> </tr> <tr> <td>Inventive step (IS)</td> <td>Claims</td> <td>_____</td> <td>YES</td> </tr> <tr> <td></td> <td>Claims</td> <td><u>1-3, 9-13, 16, 17, 22-24</u></td> <td>NO</td> </tr> <tr> <td>Industrial applicability (IA)</td> <td>Claims</td> <td><u>1-3, 9-13, 16, 17, 22-24</u></td> <td>YES</td> </tr> <tr> <td></td> <td>Claims</td> <td>_____</td> <td>NO</td> </tr> </table>			Novelty (N)	Claims	<u>1-3, 9-13, 16, 17, 22-24</u>	YES		Claims	_____	NO	Inventive step (IS)	Claims	_____	YES		Claims	<u>1-3, 9-13, 16, 17, 22-24</u>	NO	Industrial applicability (IA)	Claims	<u>1-3, 9-13, 16, 17, 22-24</u>	YES		Claims	_____	NO
Novelty (N)	Claims	<u>1-3, 9-13, 16, 17, 22-24</u>	YES																							
	Claims	_____	NO																							
Inventive step (IS)	Claims	_____	YES																							
	Claims	<u>1-3, 9-13, 16, 17, 22-24</u>	NO																							
Industrial applicability (IA)	Claims	<u>1-3, 9-13, 16, 17, 22-24</u>	YES																							
	Claims	_____	NO																							
<p><b>2. Citations and explanations (Rule 70.7)</b></p> <p>Document 1: JP 9-162402 A (Ricoh Co., Ltd.), 20 June 1997</p> <p>Document 2: JP 11-289088 A (Matsushita Electronics Industry Corporation), 19 October 1999</p> <p>Document 3: JP 2002-231717 A (Texas Instruments, Inc.), 16 August 2002</p> <p>Document 4: JP 10-303141 A (Sony Corporation), 13 November 1998</p> <p>Document 5: JP 2002-368211 A (Toshiba Corporation), 20 December 2002, entire text; all drawings (Family: none)</p> <p>Document 6: JP 2003-37115 A (NEC Corporation), 7 February 2003, entire text; all drawings &amp; US 2003/0022426 A1 &amp; KR 2003010507 A &amp; TW 548703 A</p> <p>Document 7: JP 3-74878 A (Hitachi, Ltd.), 29 March 1991</p> <p>Claims 1 to 3, 9 to 13, 16, 17 and 22 to 24</p> <p>The inventions set forth in claims 1 to 3, 9 to 13, 16, 17 and 22 to 24 do not involve an inventive step in the light of documents 1 to 6.</p> <p>Document 3 sets forth a metal oxide film with a high dielectric constant provided as a gate insulating film via a silicon-containing insulating film, therefore it</p>																										

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/JP2004/005997

Box No. V	<u>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</u>
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would be easy for a person skilled in the art to apply the gate insulating film disclosed in document 3 as the gate insulating film in the invention set forth in document 1 (entire text; all drawings) and document 2 (paragraphs [0036] to [0058], [0080]; fig. 1, 2 and 6).

In addition, documents 4 to 6 set forth a feature wherein a sidewall comprising a silicon oxide film is formed via an insulating film comprising a silicon oxide film in order to prevent the occurrence of stress, and to prevent the occurrence of boundary levels by ensuring that a sidewall comprising a silicon nitride film does not come into direct contact with a semiconductor substrate. It would therefore be easy for a person skilled in the art to employ the feature of forming a silicon oxide film set forth in documents 4 to 6 before forming the silicon nitride film of the inventions set forth in documents 1 and 2.

Moreover, it was a known technique at the time of filing of this application to form an insulating film comprising a silicon nitride film on a metal oxide film with a high dielectric constant in order to prevent reactions between the metal oxide film with a high dielectric constant and the gate electrode.